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Originally Issued: December 12, 2002
Revised: December 19, 2002

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Unapproved Minutes of the November 21, 2002
Joint Sequence IIIF Surveillance Panel Meeting
held in San Antonio, Texas

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The meeting was called to order at 9:00 am by Chairman Bill Nahumck. A membership list was circulated for members & guests to sign in. It's shown in Attachment 1.

Agenda Review

Ben Weber is Action & Motion recorder.

The Agenda was accepted as attached (Attachment 2).

Membership Changes

Monica Beyer will be the Lubrizol representative. Bill Nahumck retains the LZ vote.

Meeting Minute Status

May 16, 2002 Approved. The only revision after their distribution was:

GM also stated that it believes that 100 hours is appropriate for oxidation severity and recommended that this length be used for the Sequence IIIG (Attachment 11). However, to be certain that the IIIIG is twice as severe as the IIIF, GM felt that the test length may require 120 test hours. Further evaluation of this issue will occur after the matrix is run.

Action Item Review from May 16, 2002 Meeting

Attachment 3 shows the action items from the previous meeting. All the items were resolved prior to the meeting with the exception of the following:

- Item 5: Sequence IIIF reference oil 1009 introduction: Because of low testing frequency of the Sequence IIIF and the imminent start of the Sequence IIIG the panel decided to table this item until the next meeting to see if the oil would be brought into the Sequence IIIG test.
- Item 6: A light duty rating workshop was conducted on September 23, 2002. To spread out the timing of light and heavy duty workshops the LDRTF chairman recommended that a February 2003 joint ASTM IIIF/VG Rating workshop be conducted. The panel agreed. In order for the panel to monitor CRC rating workshop plans, the TMC was requested to be the CRC/ASTM liaison. Because of the desire of CRC to again hold rating workshops the panel discussed how ASTM test specific rating items could be addressed. The panel felt that a task force should be formed to discuss and recommend how Sequence III rater issues could be addressed. The TMC agreed to lead this group.
- Item 8: Covered under fuel supplier report
- Item 13: Head calibration data and technique still needs reviewed by the TMC during lab visits.
- Item 24: Proper quantity of reference oil to eliminate a need for a reblend after the Sequence IIIG matrix still needs to be done.
- Item 29: Sequence IIIF Test Method progress is on going.

Additional Item: The panel needs to determine a MRV and CCS measurement start limit after EOT (amount of time between the EOT and starting the bench tests). The laboratories were instructed to review with their analytical labs, consider weekends/holiday storage considerations and return recommendations to the chairman by mid-May.

TMC Sequence IIIF Semi-Annual Report

See TMC ftp site for report:

<ftp://astmtmc.cmu.edu/docs/gas/sequenceiii/semiannualreports/>

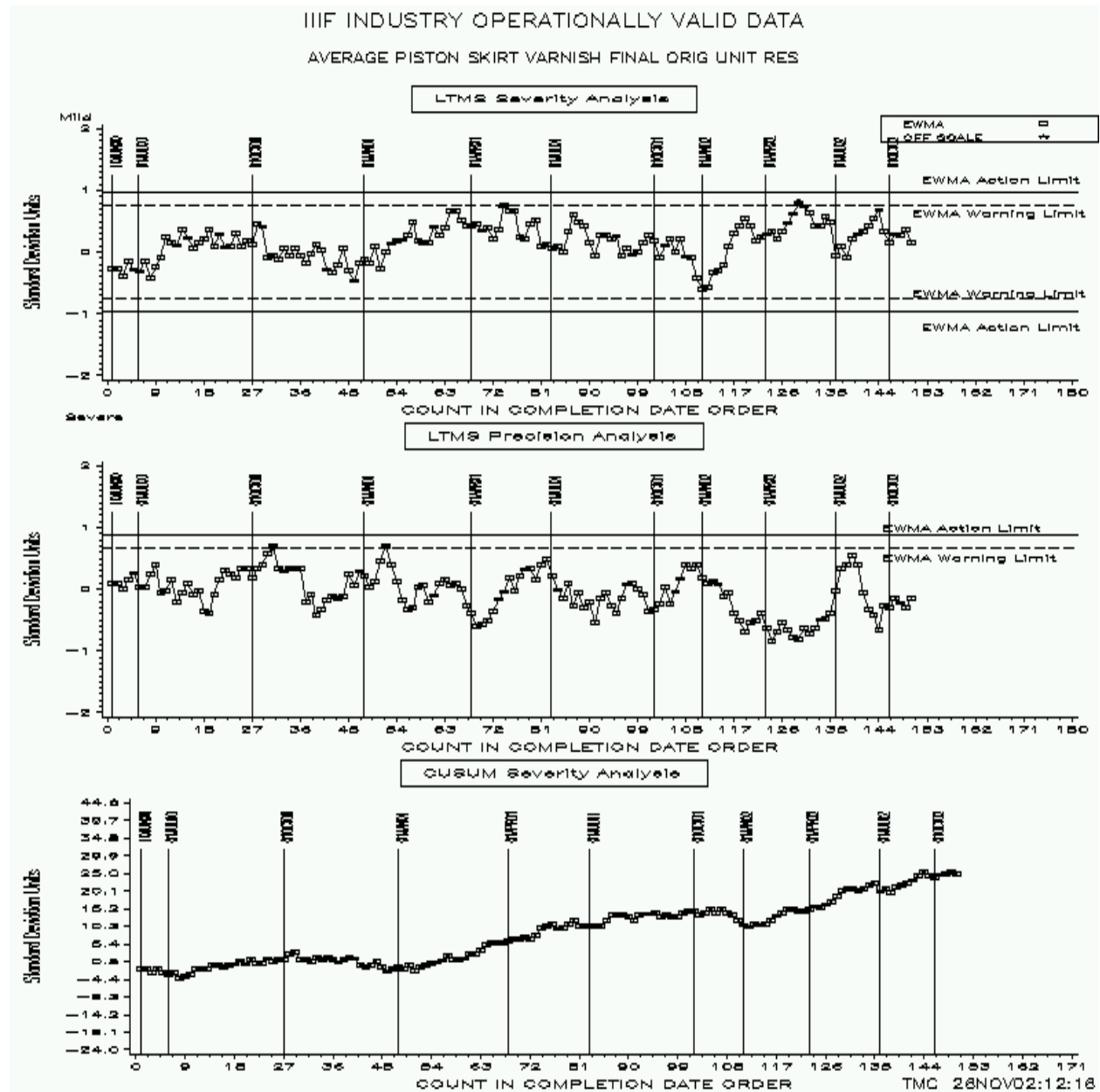
Because of a stand being pulled out of the system after the TMC report was generated the following information is different than what is shown in the distributed/archived TMC report.

Industry Severity Summary					
Parameter	Direction	Average Δ/s	Pooled s (degrees of freedom)	Average Δ , in reported units	Control Status
PVIS	Severe	-0.169	0.015 (df=18)	24.7% Viscosity Increase ¹	In-Control
APV	Mild	0.337	0.133 (df=18)	0.04 merits	In-Control
WPD	Mild	-0.180	0.547 (df=18)	0.10 merits	In-Control
PV60	Severe	1.020	0.125 (df=18)	86.6 % Viscosity Increase ²	EWMA ALARMS

¹ At the GF-3 Pass Limit of 275% Viscosity Increase

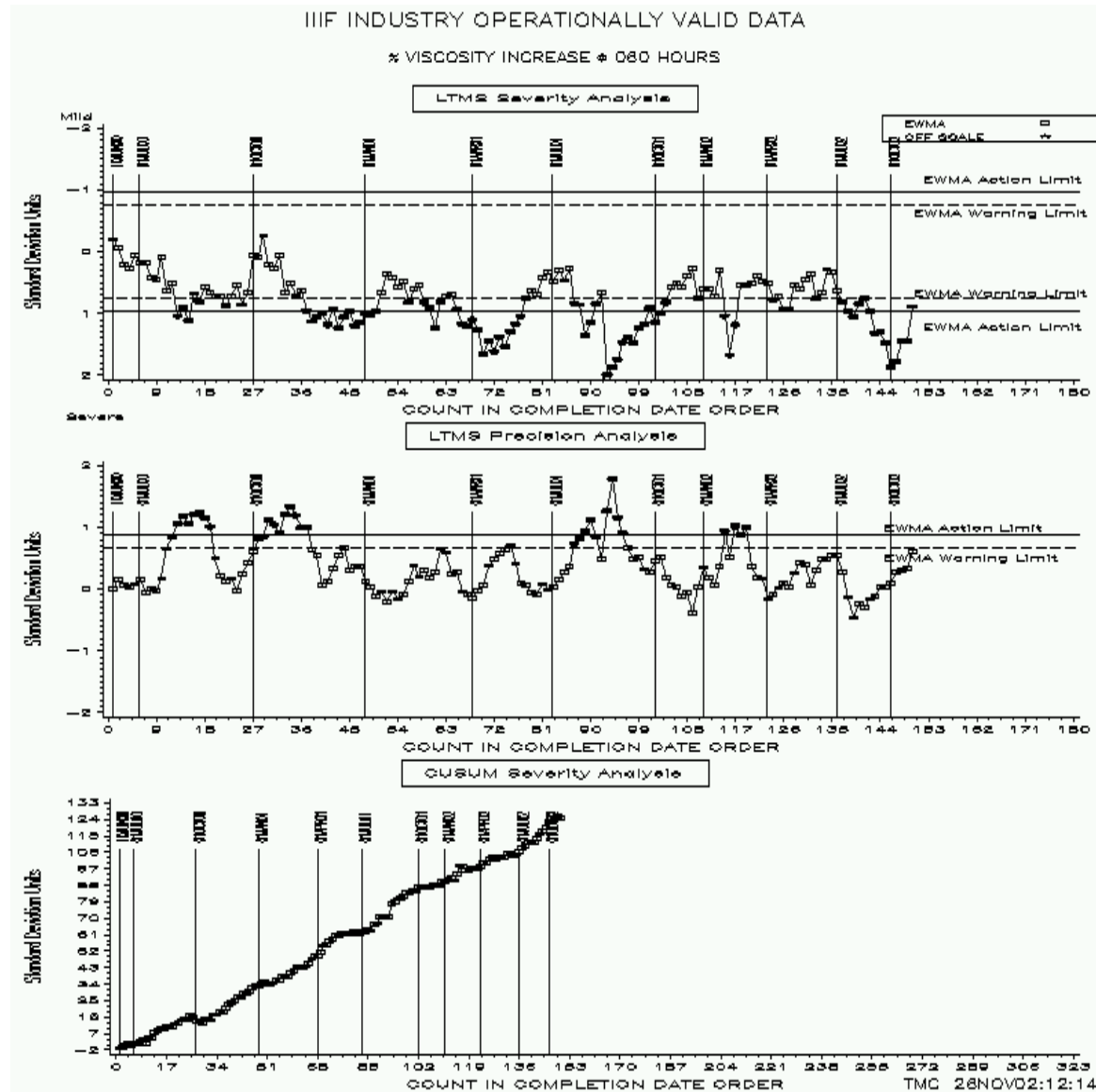
² At the CH-4 Pass Limit of 295% Viscosity Increase @ 60 hours

It was noted that APV has begun to trend mild and should be monitored closely.



The TMC was requested to review possible hardware changes to see if there is any influence on APV and WPD severity. The panel was concerned about a possible severity deposit shift and will continue to monitor.

Percent viscosity increase at 60 hours is trending severe and has been for the life of the Sequence IIIF.



The panel was concerned that the LTMS targets may not be set correctly. Phil Scinto reviewed PVIS60 targets over a break in the meeting. Phil noted that the original PVIS60 targets were set with a large amount of data and noted that there was a severity effect over time with the data. Phil felt that the current targets were set correctly. The panel agreed that appropriate action would be for the Chairman to send the Heavy-Duty Classification Panel a letter noting the severity trend and that the IIIF panel will not be taking any action on this situation.

LDRTF Report

The TMC reported that a light-duty rater workshop was held on September 23, 2002 and that no issues were raised by the raters. The LDRTF chairman recommended that a light-duty workshop be held in late-February in order to space out the light-duty and heavy-duty workshops. Currently both are held within a month of each other in late fall and can be burdensome to lab raters and the TMC. A discussion took place regarding the situation of CRC conducting rater workshops. At this point, the CRC situation is still unresolved so the panel agreed to continue the ASTM light-duty workshop. The TMC was instructed to hold a February rating workshop and to keep the panel posted on CRC workshop progress. TEI graciously offered to help host the next workshop in San Antonio.

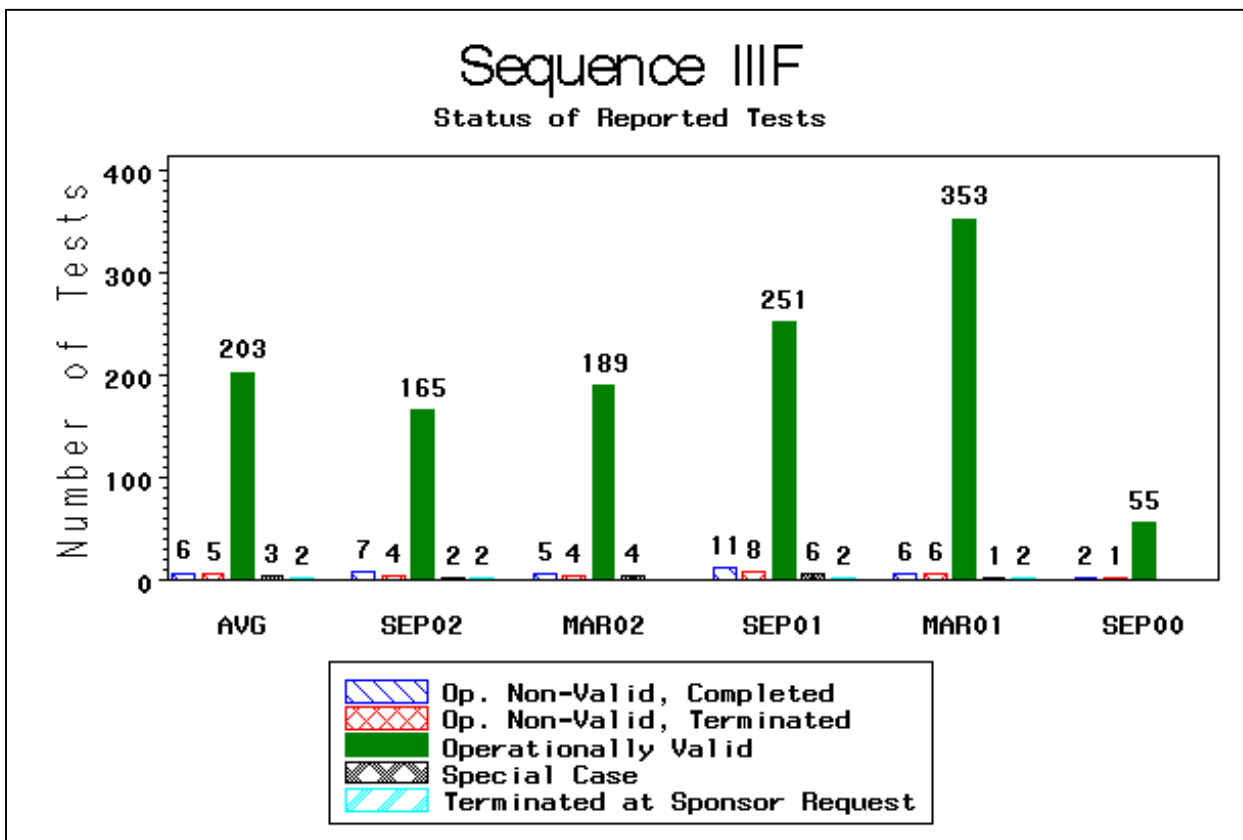
RSI Report

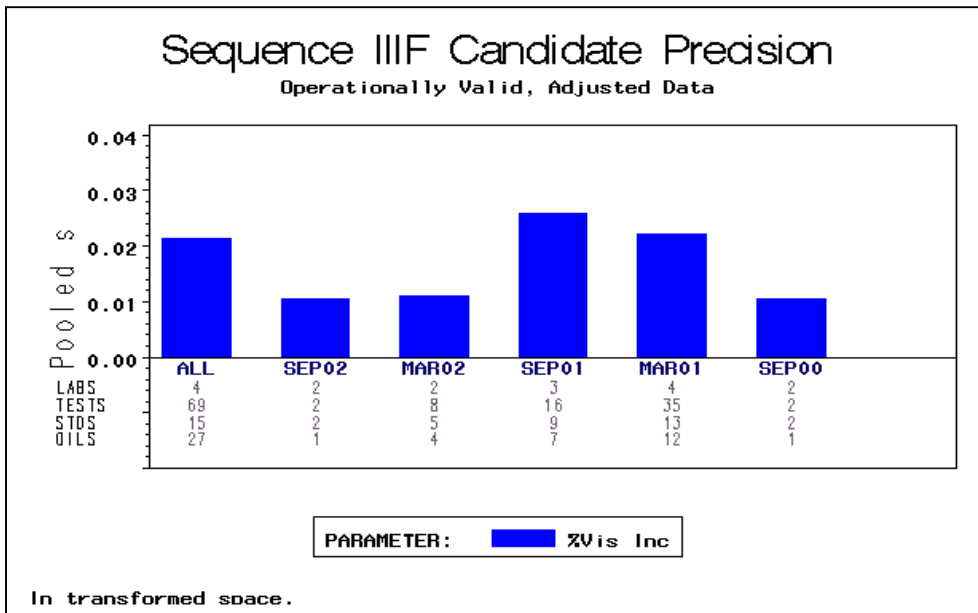
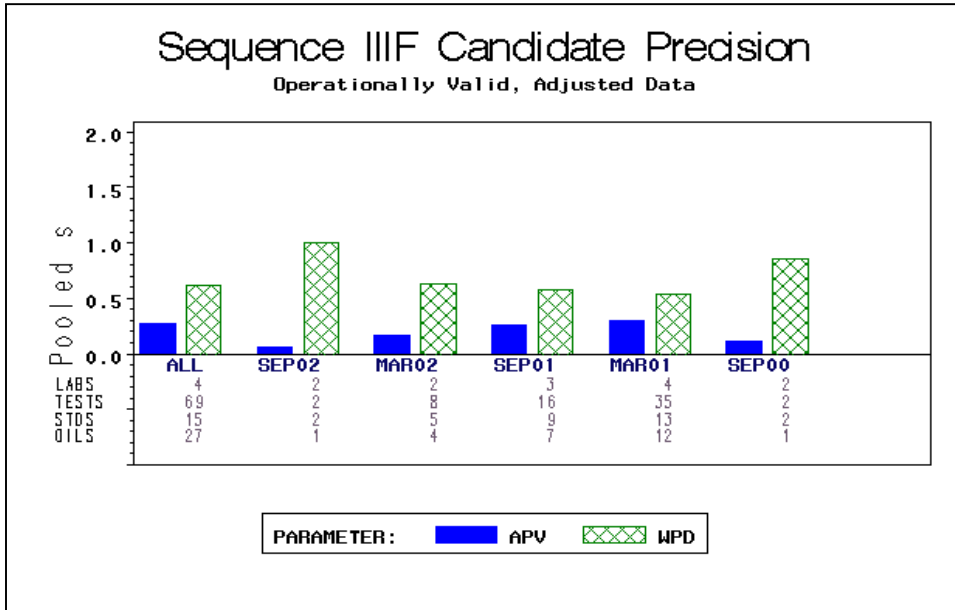
Report Accepted.

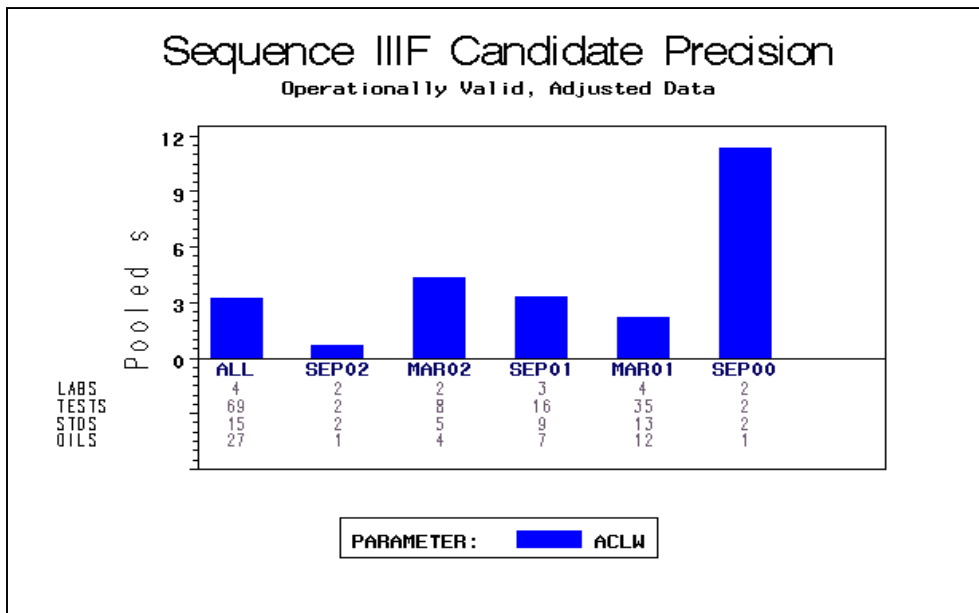
**RSI Sequence IIIF Semi-Annual Report
 Six-Month Period Ending September 30, 2002**

STATUS OF REPORTED TESTS		
STATUS	N	PERCENT
Operationally Non-Valid, Terminated	4	2.2%
Terminated at Sponsor Request	2	1.1%
Operationally Non-Valid, Completed	7	3.9%
Operationally Valid	165	91.7%
Special Case	2	1.1%
<i>Total Reported Tests</i>	<i>180</i>	<i>100.0%</i>
CAUSES FOR LOST TESTS		
	N	
Oil Consumption	1	
Control Problems	3	
Engine Mechanical Problems	4	
Support Equipment Problems	1	
Operator Error	1	
Sponsor Request	2	
Miscellaneous	1	

SEQUENCE III F PRECISION		
COMPONENTS OF REPLICATED DATA BASE	N	
Number of Tests	2	
Number of Oils	1	
Number of Labs	2	
Number of Stands	2	
Number of Severity Adjusted Avg C+L Wear Tests	0	
Number of Severity Adjusted Avg Piston Varnish Tests	0	
Number of Severity Adjusted % Vis Inc. Tests	0	
Number of Severity Adjusted Weighted Piston Deposit Tests	1	
VARIABLE	Pooled s	R
Percent Vis Increase, Adjusted	0.010	0.029
Avg Piston Varnish, Adjusted	0.057	0.158
Weighted Piston Deposits, Adjusted	1.004	2.811
Avg Cam + Lifter Wear, Adjusted	0.707	1.980
Percent Vis Increase, Non-Adjusted	0.010	0.029
Avg Piston Varnish, Non-Adjusted	0.057	0.158
Weighted Piston Deposits, Non-Adjusted	0.682	1.910
Avg Cam + Lifter Wear, Non-Adjusted	0.707	1.980







Fuel Supplier Report

Jim Carter presented fuel batch analysis data (see Attachment 4) for the Channelview distribution terminal for EEE fuel. As of 9/30/2002 the inventory was 56,583 gallons. The panel approved a motion to set a 5 - 15 ppm specification on sulfur. Haltermann reported that the fuel was being adjusted to keep the hydrocarbon light-ends at appropriate levels with the injection of iso-butane. The panel was unaware of these adjustments. Haltermann was requested to determine when the fuel was adjusted, what was used and the amount of the adjustments. Possible piston deposit shifts were a concern. The report was accepted.

CPD Report

The following information was distributed by Dwight Bowden as the CPD report:

1.) Rejections from 05/01/2002 to 11/15/2002:

Oil Coolers
 Oxidation, 2 Pieces
 Material Replaced

Pistons, Grade 12
 Damaged, 2 Pieces
 Material Replaced

Camshaft
Zero Thrust Clearance, 1 Piece
Material Replaced

Connecting Rod Bearings
Surface Finish, 1 Engine Set
Material Replaced

2.) Technical Memos Issued

Technical Memo 8, Issued 07/18/2002

“MB” & “MK” Camshafts depleted
Batch Code 7 will carry letter designation “NF”

3.) Batch Code Changes

Main Bearing	BC7 Introduced 05/24/2002
Camshaft Bearing	BC6 Introduced 05/13/2002
Pistons, GR34	BC12 Introduced 06/20/2002
Pistons, GR56	BC12 Introduced 05/17/2002
Valve Spring	BC5 Introduced 06/20/2002
Camshaft	BC7 Introduced 07/18/2002

Report was accepted.

GM Motorsport Report

The following information was verbally distributed by Sid Clark.

No race shop part rejections occurred this period. One exhaust valve seat problem was noted. Front cover surface roughness was found with a recent casting change. GM will investigate. GM indicated adequate parts availability.

Report Accepted.

O & H Report

Pat Lang presented Attachment 5.

Concern over the use of Power Cool 2000 (supplied by Detroit Diesel) as a substitute for Nacool 2000/Pencool 2000 was discussed. Lubrizol is currently using this product because of cost considerations. The outcome was to allow Power Cool 2000 at this time as long as the lab can show it was purchased within 60 days of October 9, 2002 (see Attachment 6). Documentation provided by Lubrizol showed that at this time the products are equivalent. Otherwise, the use of Power Cool 2000 is not permitted. To resolve the item Pat will request a letter from Detroit Diesel stating that Power Cool 2000 will always be the same as Pencool 2000. If the letter is obtained a procedural modification will be considered.

An alternative mass air flow sensor part number will be reviewed by GM for equivalency. It will be approved for use upon the approval of GM. Motion approved.

The SPS torque wrench specified in the procedure is no longer available (See Attachment 7). The replacement wrench is to be added to the procedure (Ingersoll-Rand EVS125-10E). Motion approved.

In order to clarify and simplify the oil leveling/oil consumption sheet Sid Clark and Pat Lang along with the Chairman will revise the oil leveling sheet and report form 5. The revisions will then be e-balloted to the panel.

O&H Report accepted.

Review of Scope & Objectives

See Attachment 8.

The Objectives were modified as follows:

Objective 1: The Chairman is to send a letter to HDEOCP explaining that IIIF introduction of 15W40 HDD, CH-4 oil will not occur.

Objective 2: GM will send a letter to TMC notifying of a change to the assembly manual. TMC will distribute a notice to the industry.

Objective 3: Sid will need to provide information on this to create an IL by June 2003.

Objective 4: Removed.

Objective 8. TMC named CRC/ASTM Rating Liaison & TMC led rater task force creation.

Sequence IIIG Development Update

Jason Bowden and Sid Clark presented Attachment 9:

GM & OHT have concluded an intense review of the camshaft manufacturing and phosphate coating processes and have made several enhancements to the way Sequence IIIG camshafts are produced phosphate coated. GM and OHT feel that a substantially superior phosphate quality level has been achieved compared to those camshafts produced prior to those designated as NF200. The phosphate operation has been moved from Engine Power to an outside vendor and is overseen by OH Technologies. It was found that Engine Power was not able to maintain the phosphate coating tank temperatures adequately. As a result, OHT recommended that an outside vendor be used whose primary business is applying phosphate coatings. Data run to date on oil 538 with the new NF camshafts looks very promising to GM and OHT. Currently, GM is focusing in on 538 results with NF200 camshafts. GM felt that the high wear results on 433-1 were not totally understood however it was felt that the results were not of major concern considering the history of this oil and wear. Some of the panel members did not necessarily agree with this comment. GM is awaiting 538 runs being conducted at PerkinElmer and SWRI. Data indicates that current NF200 camshafts are producing severity levels consistent with MK160 camshafts on oil 538. Sid Clark and Dwight Bowden also noted to the panel that the NF200 results shown used camshafts that were phosphated on three (3) different days. OHT stated that MK160 camshafts were not phosphated correctly and that the NF200 camshafts are phosphated correctly with a controlled process and are meeting GM specifications. The phosphate coating specifications includes a weight/area specification and grain size. CWC (the camshaft manufacture) is currently doing destructive testing and 100% inspection of the Sequence IIIG camshafts (same as IIIE & IIIF cams). Pending the two 538 runs in progress additional camshafts will need to be produced and run to produce a more robust data set. OHT will exchange MK phosphated camshafts with NF camshafts.

Tests run using NF200 camshafts were done using WIX/Dana oil filters because it was found that PF47 filter production had changed and Delco would not be able to certify the quality of the filter media and physical design as before. OHT will also exchange WIX oil filters for PF47. Sequence IIIF testing will continue to use the PF47 until supplies are exhausted.

Side discussion: Phil Scinto injected that ACC and LZ desires to have some kind of camshaft phosphate batch code information. Pour codes, cooling, grinding

manufacturing codes and coating weights etc. were requested. This request was declined by OHT. This position is based, in OHT's opinion, that false positive correlations have occurred on IIIF camshafts which unjustly suggested the component was of sub-standard quality. In addition, it is possible that some of the potential requested information is proprietary. GM and OHT stated that they believe the camshaft manufacturing process is in control and that additional batch coding is not necessary. That information is being monitored and will be available if needed to investigate severity issues. Phil suggested that a task group be formed to define what is meant by batch code and that the information can be made available to the industry. No action was taken on this request. The ACC request will be submitted to GM/OHT/panel in writing for review and addressed in a timely manner. Additionally, concern over batch size was also raised. GM/OHT felt that since the manufacturing process was well controlled batch size was not an issue. Phil suggested a list of runs that have been made and are planned so that industry can review and digest prior to future meetings. GM will take the suggestion under advisement.

IIIG CCS & MRV Draft Revision:

Attachment 10 shows sections of the Sequence IIIG procedure that need to be modified and released to the industry as Draft 2. These are different than what is currently done for the Sequence IIIF. In addition, report forms and the data dictionary need to be modified to accommodate the changes.

Report accepted.

Update from GF-4 Matrix Design Task Force Report

Frank Fernandez noted that the GF-4 Matrix Design Task Force has recommended that a 24 test matrix be run. The ballot closed 11/20/02 with a split decision. All OEM's voted negative, all additive and oil companies voted approve/ with the exception of one returned ballot. As a result, Frank distributed an 18-test matrix ballot to the industry for a vote. The vote will close in December.

ACC Template Update

The chair reviewed the ACC template and is Attachment 11. The only issue that was lacking was in the area of field data correlation. The panel will not be able to address this issue because of the absence of data.

ASTM Sequence IIIF Standard

ASTM test method has been sent to Tom Verdura and will be submitted to panel for review by Sid. The goal is to have the vote on raising the procedure to an ASTM standard Dxxxx issue by March 2003.

Review Scope and Objectives

Objectives are below:

Identify 15W-40 HDD, CH-4 oil for the IIIF reference system - Chairman will send letter to HDEOCP informing them that due to the drop of Sequence IIIF testing this oil will not be brought into the system.

Topic

Due Date

Assembly Manual Revision System	November 2002
(GM will inform the TMC by letter on at least a quarterly basis of any Assembly Manual revisions. The TMC will place the revisions on the website and distribute to the industry.)	
Fluid Rack System Clarification	June 2002
Issue Draft 5 of IIIF Test Method	Done
Resolution of unexplained IIIF Wear	November 2002
Revise IIIF ASTM Standard	August 2002
Develop Sequence IIIG Test	July 2002
Introduce GF-3 Category Oil	November 2002
Revised Oil Cooling System	Done

Old Business

Chris May has requested drain oil samples from laboratories for refining the techniques for used oils in new oil tests like the MRV and CCS. The panel encouraged labs to submit samples to Chris.

New Business

Elimination of the procedural photo requirement was discussed. GM noted that they will keep the photo requirement for any factory fill or service fill submission for GM's approval. Sid Clark also noted that the photograph requirement will be retained for any sample, reference or candidate, submitted to PRI. The panel requested that this requirement be optional for candidate runs. No action taken. Panel members were requested to discuss this topic with their customers. The panel will review this item at the next meeting.

Concern over the fuel pressure that labs are running was raised by Monica Beyer. TMC reference oil data indicates that all labs are not running within the 365 +/- 5 kPa specification. The parameter is a read-only parameter. GM felt that the range could be increased. GM will clarify this specification.

Next Meeting

Next meeting will be at the call of the chair.

Motions & Action Items

Motions & Action Items see Attachment 12.


Attachment	1
Page	1
Reference	

ASTM SEQUENCE IIIF LIST

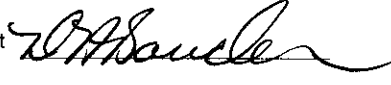
November 21, 2002 San Antonio, Texas

NAME / ADDRESS PHONE / FAX / E-MAIL SIGNATURE

Ed Altman 804-788-5279 IIIF SURV PANEL Present _____
Ethyl Petroleum Additives, Inc. 804-788-6358 IIIF MAILING LIST
P.O. Box 2158 ed_altman@ethyl.com O&H SUBPANEL
Richmond, VA 23218-2158 O&H Mailing List
USA

Beto Araiza 210-690-1958 IIIF SURV PANEL Present 
Test Engineering, Inc. 210-690-1959 IIIF MAILING LIST
12718 Cimarron Path baraiza@testeng.com O&H SUBPANEL
#102 *TEI-Net.Com* O&H Mailing List
San Antonio, TX 78249
USA

Monica Beyer 440-347-2006 IIIF SURV PANEL Present _____
The Lubrizol Corporation 440-347-4096 IIIF MAILING LIST
29400 Lakeland Boulevard mbey@lubrizol.com O&H SUBPANEL
Wickliffe, OH 44092 O&H Mailing List
USA

Dwight H. Bowden 440-354-7007 IIIF SURV PANEL Present 
OH Technologies, Inc. 440-354-7080 IIIF MAILING LIST
9300 Progress Parkway dhwbowden@ohtech.com O&H SUBPANEL
P.O. Box 5039 O&H Mailing List
Mentor, OH 44061-5039
USA

Donald Bryant 440-347-2159 IIIF SURV PANEL Present _____
The Lubrizol Corporation 440-943-9004 IIIF MAILING LIST
28400 Lakeland Boulevard debr@lubrizol.com O&H SUBPANEL
Wickliffe, OH 44092 O&H Mailing List
USA

ASTM SEQUENCE IIIF LIST

November 21, 2002 San Antonio, Texas

NAME / ADDRESS	PHONE / FAX / E-MAIL		SIGNATURE
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Don Burnett ChevronPhillips Chemical Compan Chevron Tower 1301 McKinney Street Suite 2130 Houston, TX 77010-3030 USA	713-289-4859 713-289-4865 burnede@cpchem.com	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
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William A. Buscher, Jr. Texaco Inc. P.O. Box 112 Hopewell Jet, NY 12533 USA	845-897-8069 845-897-8069 buschwa@aol.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input checked="" type="checkbox"/> O&H Mailing List	Present _____
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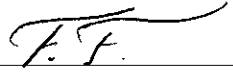

James Carter Haltermann Products 3520 Okemos Rd. Suite #6-176 Okemos, MI USA	517-347-3021 517-347-1024 JECarter@dow.com	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present <u>JEC</u>
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Timothy L. Caudill Ashland Oil Inc. 22nd & Front Streets Ashland, KY 41101 USA	606-329-5708 606-329-3009 tlcaudill@ashland.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present <u>TLC</u>
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Sid Clark GM Powertrain General Motors Corporation Mail Code 480-106-160 30500 Mound Rd. Warren, MI 48090-9055 USA	⁵⁸⁶ 810 -986-1929 810 -986-2094 sidney.l.clark@gm.com Test Sponsor Rep	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present <u>Sid</u>
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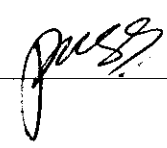
ASTM SEQUENCE IIIF LIST

November 21, 2002

NAME / ADDRESS	PHONE / FAX / E-MAIL		SIGNATURE
Francis R. Duffey DaimlerChrysler 800 Chrysler Road CIMS 482-00-13 Auburn Hills, MI 48236-2757 USA	248-576-7476 248-576-7490 fd13@daimlerchrysler.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
Frank Farber ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206 USA	412-365-1030 412-365-1047 fmf@astmtmc.cmu.edu	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present 
Gordon R. Farnsworth Infineum P.O. Box 735 Linden, NJ 07036 USA	908-474-3351 908-474-3637 gordon.farnsworth@infineum.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input checked="" type="checkbox"/> O&H Mailing List	Present 
Frank Fernandez Oronite Global Technology 4502 Centerview Drive Suite 210 San Antonio, TX 78228 USA	210-731-5603 210-731-5699 ffer@chevron.com PCEOCP Chair	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present 
David L. Glaenzer Ethyl Petroleum Additives, Inc. 500 Spring Street P.O. Box 2158 Richmond, VA 23218-2158 USA	804-788-5214 804-788-6358 dave_glaenzer@ethyl.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input checked="" type="checkbox"/> O&H Mailing List	Present 

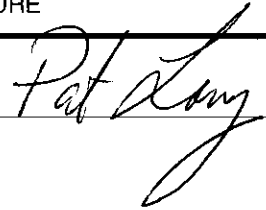

ASTM SEQUENCE IIIF LIST

November 21, 2002 San Antonio, Texas

NAME / ADDRESS	PHONE / FAX / E-MAIL		SIGNATURE
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Barry J. Jecewski Ford Motor Company 21500 Oakwood Boulevard POEE Building, MD #34 P.O. Box 2053 Dearborn, MI 48121-2053 USA	313-594-6943 303-845-0613 bjecewsk@ford.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
Michael T. Kasimirsky ASTM Test Monitoring Center 6555 Penn Avenue Pittsburgh, PA 15206 USA	412-365-1033 412-365-1047 mtk@astmtmc.cmu.edu	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
Brian Kunding Kunding Controls 1771 Harmon Road Auburn Hills, MI 48326 USA	248-391-6100 248-391-6900 bkunding@kunding.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
Patrick Lai Imperial Oil Limited 453 Christina Street Research Department P.O. Box 3022 Sarnia, Ontario N7T7MI CANADA	519-339-5611 519-339-5866 patrick.k.lai@esso.com	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present 

ASTM SEQUENCE IIIF LIST

November 21, 2002 San Antonio, Texas

NAME / ADDRESS	PHONE / FAX / E-MAIL		SIGNATURE
Patrick Lang Southwest Research Institute 6220 Culebra Road P.O. Box 28510 San Antonio, TX 78228 USA	210-522-2820 210-684-7523 plang@swri.edu O&H Subpanel Chairman	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present 
Charlie Leverett PerkinElmer Automotive Research, 5404 Bandera Road San Antonio, TX 78238 USA	210-647-9422 210-523-4607 charlie.leverett@perkinelmer.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present 
Vince Livoti Ciba Specialty Chemicals 540 White Plains Road P.O. Box 2005 Tarrytown, NY 10591-9005 USA	914-785-4494 914-785-4249 vincent.livoti@cibasc.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
Mike McMillan GM R&D Center Building 1-6 Chemical & Environmental Science 12 Mile & Mound Roads Warren, MI 48090-9057 USA	810-986-1935 810-986-2094 micheal.l.mcmillan@gm.com	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input checked="" type="checkbox"/> O&H Mailing List	Present _____
John Moffa Castrol International Technology Centre Whitchurch Reading, RG8 7QR ENGLAND	00441189765263 00441189841131 John_Moffa@burmahcastrol.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input checked="" type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____

ASTM SEQUENCE IIIF LIST

November 21, 2002 San Antonio, Texas

NAME / ADDRESS PHONE / FAX / E-MAIL SIGNATURE

Alfredo Montez 210-731-5604 IIIF SURV PANEL Present AM
 Chevron Oronite 210-731-5694 IIIF MAILING LIST
 4502 Centerview Drive AMMN@chevron.com O&H SUBPANEL
 #210 AMMN@chevronteaco.com O&H Mailing List
 San Antonio, TX 78228
 USA

Mark Mosher 856-224-2132 IIIF SURV PANEL Present MM
 Mobil Technology Company 856-224-3628 IIIF MAILING LIST
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William M. Nahumck 440-347-2596 IIIF SURV PANEL Present W.M.N.
 The Lubrizol Corporation 440-347-4096 IIIF MAILING LIST
 29400 Lakeland Boulevard wmn@lubrizol.com O&H SUBPANEL
 Wickliffe, OH 44092 O&H Mailing List
 USA
 Surveillance Panel Chair

Rick Oliver 972-724-2136 IIIF SURV PANEL Present RO
 Registration Services Inc. 210-341-4038 IIIF MAILING LIST
 2805 Beverly Drive crickoliver@attbi.com O&H SUBPANEL
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 USA

Robert Olree 810-947-0069 IIIF SURV PANEL Present RO
 GM Powertrain 810-986-2094 IIIF MAILING LIST
 30500 Mound Road robert.olree@gm.com O&H SUBPANEL
 m/c 480-106-160 O&H Mailing List
 Warren, MI 48090-9055
 USA

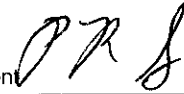
ASTM SEQUENCE IIIF LIST


November 21, 2002 San Antonio, Texas

NAME / ADDRESS	PHONE / FAX / E-MAIL		SIGNATURE
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Robert H. Rumford Specified Fuels & Chemicals, LLC 1201 South Sheldon Road Channelview, TX 77530-0429 USA	281-457-2768 281-457-1469 rhrumford@specified1.com	<input checked="" type="checkbox"/> IIIF SURV PANEL <input type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
---	--	---	---------------

Jim Rutherford Chevron 100 Chevron Way Richmond, CA 94802 USA	510-242-3410 510-242-1930 jaru@chevron.com	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present _____
---	--	---	---------------

Philip R. Scinto The Lubrizol Corporation 29400 Lakeland Boulevard Wickliffe, OH 44092 USA	440-347-2161 440-347-9031 prs@lubrizol.com	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present  _____
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Ben Weber Southwest Research Institute 6220 Culebra Road P.O. Box 28510 San Antonio, TX 78228 USA	210-522-5911 210-684-7530 bweber@swri.edu Sub-Committee D02.B01 Chair	<input type="checkbox"/> IIIF SURV PANEL <input checked="" type="checkbox"/> IIIF MAILING LIST <input type="checkbox"/> O&H SUBPANEL <input type="checkbox"/> O&H Mailing List	Present  _____
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AGENDA
SEQUENCE III F SURVEILLANCE PANEL MEETING

San Antonio, Texas
November 21, 2002

Attachment	2
Page	1
Reference	

1. APPOINTMENT OF RECORDER OF ACTIONS/MOTIONS
2. AGENDA REVIEW
3. MEMBERSHIP CHANGES
4. APPROVAL OF MINUTES FROM May 16, 2002
(Available for viewing at the TMC website)
5. REVIEW OF ACTION ITEMS

SEQUENCE III F

1. TMC TEST STATUS UPDATE – MIKE KASIMIRSKY
2. RSI REPORT – Rick Oliver
3. FUEL SUPPLIER REPORT
4. CPD SUPPLIER REPORTS
 - A. OHT
 - B. GM MOTORSPORTS
5. O&H SUBPANEL REPORT – PAT LANG
6. STATUS OF THE WEAR INVESTIGATION
7. SEQUENCE III G DEVELOPMENT UPDATE
 - A. Is the test ready for a Precision Matrix?
 - B. Update from the Matrix Design Task Force – Don Marn
 - C. ACC Template Update – Phil Scinto
8. OLD BUSINESS
 - A. Review of Scope & Objectives
 - B. Drain Oil Request from Chris May, Section D02.07C
9. NEW BUSINESS

ADJOURNMENT

Attachment	3
Page	1
Reference	

Motions & Action Items
Sequence IIIF Surveillance Panel
May 16, 2002
As Recorded at the Meeting by Ben Weber

1. Previous meeting minutes accepted as written.
2. TMC report accepted as presented with the noted precision and severity shifts for some parameters like WPD.
3. Test labs should review the groove piston ratings to see if there is any precision improvements that can be made, or if this measurement is difficult to accurately perform. One suggestion at the meeting concerned cleaning of the pistons. Dual ratings have been taking place at some of the test labs, and rating differences have not been a problem.
4. [Dwight B & Mike K] 1008-1 will be brought into the system using the older 1008 targets during normal calibration testing. Targets will be reviewed after 5 tests, then updated at 10, 20 & 30. Passed unanimously.
- 5. TMC will check into the possibility of coordinating the introduction of 1009 during a given time period that is acceptable to all test labs.
- 6. The group agreed that the next future light-duty rating workshops should be held during the October timeframe in conjunction with the heavy-duty rating workshops. It was left open for later discussion about having a workshop before the next scheduled fall workshop. Scott Parke of the TMC will coordinate these future workshops for both heavy- and light-duty ratings.
7. The RSI report was accepted as presented.
- 8. The fuel supplier report was accepted as presented. By September 2002 EEE HF003 fuel for the IIIF, which will now be different than the new EPA fuel in terms of sulfur limits (approx. 25 – 35 ppm for the EPA version), will all come from their Houston location in Channelview, Texas. The fuel supplier will review sulfur levels from previous batches over the last few years to see where the sulfur maximum has been and possibly determine a specification or range for EEE HF003. Most of the sulfur levels have been around 10-15 ppm for the EEE HF003 fuel.
9. CPD OHT report was accepted as presented.
10. CPD GM Motorsports report was accepted as presented. GM will continue to investigate the valve seat recession problems.
11. [Pat L & Sid Clark] Accept the OHT external oil bypass system in conjunction with the 0.500" oil filter adapter and specified thermocouple for use in the IIIF test. Place a note in the comments section of the test report when the bypass occurs and at what test hours. Use of this system does not change the current guidelines outlined in the IIIF procedure for changing the oil filter and cooler during a test. Effective June 1, 2002. Passed unanimously.
12. Labs will experiment with the external oil bypass system and report back to the O&H panel about standardization on what to do when you go into bypass by August 2002.
- 13. TMC will review the head calibration data and technique during their next lab visits.
- 14. The test labs need to notify the O&H chair on what type of solvent specification they are using. Bob Rumford expressed interest in helping the O&H chair with this task.
15. [Charlie L & Dwight B] The Sequence III surveillance panel recommends that the Information Letter concerning the use of the MnP coating in IIIF testing be withdrawn. The vote was 12-0-1.
16. The SP decided that IIIG lab visits and a IIIG engine build workshop is not required at this time due to the very similar nature of the IIIG to the IIIF test method.
- 17. IIIG WPD ratings should be done using the current method and a new method proposed by GM listed below. (Ben and Bill, Daryl I am not sure we had full resolution on this item. If you think we did, do we need to modify report forms to include the new WPD result?) There is some concern about chipping of the thin carbon on the crown land. It was suggested that the raters get together and discuss GM's proposal and any other IIIG rating concerns via teleconference mentioned below.
 - Crown land at 0.2
 - 2nd land at 0.2
 - 3rd land at 0.2
 - 1st groove at 0.1
 - 2nd groove at 0.1

Dropped
per
Bob Olree

Attachment	3
Page	2
Reference	

- 3rd Groove at 0.1
- Under-crown at 0.1

18. The SP is interested in seeing as much IIIG development data as possible like individual cam lobe wear data, etc. It was decided to e-mail the membership whatever extra data can be distributed to the SP.
19. [Sid C & Dwight B] The IIIG test sponsor report was accepted as presented with the above items noted.
20. [Dwight B & Dave G] Current labs will need to run one demonstration IIIG test to prove initial performance prior to any formal matrix testing. PerkinElmer and SwRI are exempt from this requirement due to their development work. This demonstration run needs to be completed by June 30, 2002. ILSAC will define the oil by June 1, 2002. The labs are to communicate to Don Marn, chair of the Matrix Design Task Force, by June 1, 2002 their intention to comply with these requirements. The SP will convene once all the data is complete and determine if acceptability has been achieved. Passed unanimously.
21. [Charlie L & Dwight B] The Surveillance Panel recommends to the MDTF that at a minimum, 3 oils will be used and at least two viscosity oils. ILSAC will choose these oils. Passed unanimously.
22. [Thom Smith & Tom Boschart] For calibrated IIIF laboratories, the 2-2 testing protocol will be used in the matrix. The vote was 3 for, 0 against, and 9 waives. This is a passing motion using the simple majority rule for Surveillance Panels.
23. The Memorandum of Agreement will need to be adjusted and reviewed to be in agreement with the decisions made by the Sequence III Surveillance Panel.
- 24. The SP or Matrix Design Task Force will need to discuss the proper quantity of oils blended to cover the future use of any of these oils as potential reference oils without having to go through a re-blend right after the matrix testing is complete.
- Done → 25. TMC and GM will expedite the release of the IIIG test method and assembly manual. The target is to have this completed by the first week in June 2002.
- 26. The TMC will coordinate a IIIG rating teleconference by mid-June 2002.
- 27. The IIIG test labs will need to continue to measure MRV and CCS on EOT oil samples.
- 28. The test labs are also requested to send any of their IIIF EOT reference samples to Chris May of ASTM Section D02.07C by June 15, 2002. The sample size needed will be clarified later by Daryl B.
- 29. IIIF test method still needs to be completed as an ASTM standard.
20. [Charlie L & Dwight B] Remove the lifter designations from the IIIFHD test report. Passed unanimously.
31. [Charlie L & Dwight B] The TMC will start using 6 decimal places for the viscosity increase severity adjustment on their LTMS calibration sheets. Passed unanimously.

PRODUCT: EEE Unleaded Gasoline
PRODUCT CODE: HF003

Batch No.: QG1721LS03
Tank No.: 2014
Analysis Date: 7/23/2002

TEST	METHOD	UNITS	FED Specs		HALTERMANN Specs			RESULTS
			MIN	MAX	MIN	TARGET	MAX	
Distillation - IBP	ASTM D86	°F	75	95	75		95	89
5%		°F						115
10%		°F	120	135	120		135	129
20%		°F						148
30%		°F						171
40%		°F						197
50%		°F	200	230	200		230	220
60%		°F						234
70%		°F						246
80%		°F						268
90%		°F	305	325	305		325	320
95%	°F						337	
Distillation - EP		°F		415			415	395
Recovery		vol %				Report		97.2
Residue		vol %				Report		1.0
Loss		vol %				Report		1.8
Gravity	ASTM D4052	°API	58.7	61.2	58.7		61.2	59.3
Density	ASTM D4052	kg/l			0.734		0.744	0.742
Reid Vapor Pressure	ASTM D323	psi	8.7	9.2	8.7		9.2	9.0
Reid Vapor Pressure	ASTM D5191	psi				Report		8.80
Carbon	ASTM D3343	wt fraction				Report		0.8656
Carbon	ASTM E191	wt fraction				Report		0.8624
Hydrogen	ASTM E191	wt fraction				Report		0.1352
Hydrogen/Carbon ratio	ASTM E191	mole/mole				Report		1.852
Oxygen	ASTM D4815	wt %					0.05	<0.05
Sulfur	ASTM D5453	ppm		1000			1000	8
Sulfur	ASTM D2622	wt%		0.1		Report		<0.001
Lead	ASTM D3237	g/gal		0.05			0.01	<0.01
Phosphorous	ASTM D3231	g/gal		0.005			0.005	<0.0008
Composition, aromatics	ASTM D1319	vol %		35.0			35.0	29.8
Composition, olefins	ASTM D1319	vol %		10.0			10.0	0.5
Composition, saturates	ASTM D1319	vol %				Report		69.7
Particulate matter	ASTM D5452	mg/l					1	0.5
Oxidation Stability	ASTM D525	minutes			240			>1000
Copper Corrosion	ASTM D130						1	1
Gum content, washed	ASTM D381	mg/100mls					5	<1
Fuel Economy Numerator/C Density	ASTM E191				2401		2441	2422
C Factor	ASTM E191					Report		1.0014
Research Octane Number	ASTM D2699		93.0		96.0			96.7
Motor Octane Number	ASTM D2700					Report		88.0
Sensitivity			7.5		7.5			8.7
Net Heating Value, btu/lb	ASTM D3338	btu/lb				Report		18467
Net Heating Value, btu/lb	ASTM D240	btu/lb				Report		18378
Color	VISUAL	1.75 ptb				Report		Red

PRODUCT: EEE Unleaded Gasoline
PRODUCT CODE: HF003

Batch No.: QH1521LS01 QH2121LS01
Tank No.: 2012 2014
Analysis Date: 9/23/2002 8/28/2002

TEST	METHOD	UNITS	FED Specs		HALTERMANN Specs			RESULTS	RESULTS
			MIN	MAX	MIN	TARGET	MAX		
Distillation - IBP	ASTM D86	°F	75	95	75		95	88	95
5%		°F						115	116
10%		°F	120	135	120		135	128	129
20%		°F						148	148
30%		°F						171	181
40%		°F						199	197
50%		°F	200	230	200		230	221	220
60%		°F						233	232
70%		°F						245	244
80%		°F						268	266
90%		°F	305	325	305		325	321	324
95%		°F						336	336
Distillation - EP		°F		415			415	396	395
Recovery		vol %				Report		97.8	97.0
Residue		vol %				Report		1.0	1.0
Loss		vol %				Report		1.2	2.0
Gravity	ASTM D4052	°API	58.7	61.2	58.7		61.2	58.9	58.8
Density	ASTM D4052	kg/l			0.734		0.744	0.743	0.744
Reid Vapor Pressure	ASTM D323	psi	8.7	9.2	8.7		9.2	9.2	9.1
Reid Vapor Pressure	ASTM D5191	psi				Report		9.10	8.90
Carbon	ASTM D3343	wt fraction				Report		0.8653	0.8658
Carbon	ASTM E191	wt fraction				Report		0.8627	0.8625
Hydrogen	ASTM E191	wt fraction				Report		0.1348	0.1320
Hydrogen/Carbon ratio	ASTM E191	mole/mole				Report		1.862	1.825
Oxygen	ASTM D4815	wt %					0.05	<0.05	<0.05
Sulfur	ASTM D5453	ppm		1000			1000	11	11
Sulfur	ASTM D2622	wt%		0.1		Report		<0.001	<0.001
Lead	ASTM D3237	g/gal		0.05			0.01	<0.01	<0.01
Phosphorous	ASTM D3231	g/gal		0.005			0.005	<0.0008	<0.0008
Composition, aromatics	ASTM D1319	vol %		35.0			35.0	28.8	29.6
Composition, olefins	ASTM D1319	vol %		10.0			10.0	0.4	0.1
Composition, saturates	ASTM D1319	vol %				Report		70.8	70.3
Particulate matter	ASTM D5452	mg/l					1	0.3	0.6
Oxidation Stability	ASTM D525	minutes			240			>1000	>1000
Copper Corrosion	ASTM D130						1	<1	<1
Gum content, washed	ASTM D381	mg/100mls					5	<1	<1
Fuel Economy Numerator/C Density	ASTM E191				2401		2441	2428	2436
C Factor	ASTM E191					Report		1.0005	1.0028
Research Octane Number	ASTM D2699		93.0		96.0			97.0	96.8
Motor Octane Number	ASTM D2700					Report		87.9	88.9
Sensitivity			7.5		7.5			9.1	7.9
Net Heating Value, btu/lb	ASTM D3338	btu/lb				Report		18475	18465
Net Heating Value, btu/lb	ASTM D240	btu/lb				Report		18442	18372
Color	VISUAL	1.75 ptb				Report		Red	Red

Attachment	5
Page	1
Reference	

Sequence IIIF O&H Report

Presented by: Patrick Lang
November 21, 2002
San Antonio, Texas

Current Activities

- Exhaust valve seat failures
 - Some labs experienced exhaust valve seats coming out of place during IIIF and IIIG testing
 - Machined depth of the exhaust seat pocket increased
 - Cylinder heads are in distribution
 - Modified heads have a red dot on the outside of the box and are acceptable for immediate use

Attachment	5
Page	2
Reference	

Current Activities (cont'd)

- Various names for same coolant additive
 - Nacool 2000
 - Pencool 2000
 - Power Cool 2000
- Documentation from the supplier has stated that Power Cool is same as Pencool/Nacool
- Need to add Power Cool to procedure

IIIF O&H Report 11/21/02

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Current Activities (cont'd)

- Mass air flow sensor part number has changed from 24508238 to 12568877. Both are considered equivalent.
- SPS Torque wrench specified in procedure is no longer available from listed manufacturer. Correction needs to be made to procedure.

IIIF O&H Report 11/21/02

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Attachment	5
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Reference	

Motion

- Modify the IIIF procedure to incorporate the following:
 - ~~Power Cool to be listed as an acceptable coolant additive~~
 - Alternate electronic torque wrench model number, Ingersoll-Rand EVS125-10E to be listed. There will be another ETW model in the near future.
 - Superseded mass air flow sensor number - *PENDING GM APPROVAL*

IIIF O&H Report 11/21/02

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O & H Future Work

- Recommend changes to the flush cart to help prevent the recirculation of casting sand during the flush
- Solvent specification in IIIF procedure
 - Industry looking to settle on one type of solvent that can be used on both gas and diesel testing.
- Batch Concept/Hardware Control Task Force to generate Info. Letter 60 type document.


IIIF O&H Report 11/21/02

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Sequence IIIF Evaluation

Operational Summary Form 5

Attachment	5
Page	5
Reference	_____



Laboratory:	Oil Code:
Test Stand No.:	Test No.:
Laboratory Oil Code:	
Formulation / Stand Code:	

Controlled Parameters	Parameter	Units	QI Threshold	EOT QI	Target	Average	Standard Deviation	Number Of	
								Samples	BQD
Speed	r/min	0.000		3600					
Load	N·m	0.000		200					
Oil Filter Block	°C	0.000		155.0					
Engine Coolant Out	°C	0.000		122.0					
Condenser Coolant Out	°C	0.000		40.0					
Left Air-to-Fuel Ratio		0.000		15.0					
Right Air-to-Fuel Ratio		0.000		15.0					
Left Exhaust Back Pressure	kPa	0.000		6.0					
Right Exhaust Back Pressure	kPa	0.000		6.0					
Intake Air	kPa	0.000		0.05					
Engine Coolant Flow	L/min	0.000		160.0					

Non-controlled Parameters	Parameter	Units	Average	Standard Deviation	Number Of	
					Samples	BQD
Oil Sump		°C				
Pump Outlet Pressure		kPa				
Gallery Pressure		kPa				
Engine Coolant In		°C				
Fuel Inlet		°C				
Inlet Air		°C				
Intake Air Dew Point		°C				
Intake Vacuum		kPa				
Crankcase		kPa				
Fuel Pressure		kPa				

Oil Consumption Data									
Hours	Initial Run-in								
Level (ml) low									

NO _x Measurement			
Hours			
NO _x ppm			

DETROIT DIESEL

A DaimlerChrysler Company



October 9, 2002

Attachment	6
Page	1
Reference	

Dear To Whom it May Concern

Power Cool 2000 and Pencool 2000

This letter is to inform you that Detroit Diesel Power Cool 2000 is exactly the same chemistry as Pencool 2000. Both products are manufactured by the Penray Company. Power Cool is a Detroit Diesel brand name and the Penray Company private labels Pencool 2000 for Detroit Diesel Corporation as Power Cool 2000. The only difference is the label.

Should you have any questions, or require further clarification please feel free to contact me directly.

Sincerely,

Edward J. Hart
Performance Products Development Manager
Phone: 313-592-7681
Fax: 313-595-3878



Attachment	6
Page	2
Reference	

DETROIT DIESEL

CORPORATION



POWER COOL Products

POWER COOL Engine Antifreeze/Coolant

- Concentrated 23512138 One gallon jugs (6 per case)
- 23512139 55 gallon drums
- 23512140 Bulk delivery - 1,000 gallon minimum
- Pre-blended 50:50 23518918 55 gallon drums
- 23513503 Bulk delivery - 1,000 gallon minimum
- Pre-blended 33:67 23524737 1 gallon jug (6 per case)
- 23524922 5 gallon pail
- 23524923 55 gallon drums
- 23524924 Bulk delivery - 1,000 gallon minimum

POWER COOL 3149

- 23528571 Bulk
- 23528572 55 gallon drums

POWER COOL Plus Extended Life Diesel Engine Coolant (NOAT)

- Concentrated 23519397 One gallon jugs (6 per case)
- 23519394 55 gallon drums
- 23519395 Bulk delivery - 2,000 gallon minimum
- Pre-blended 50:50 23519396 One gallon jugs (6 per case)
- 23519398 55 gallon drums
- 23519399 Bulk delivery - 2,000 gallon minimum

POWER COOL Plus Extender for use with POWER COOL Plus

- 23519400 6 x 1 quart bottles

POWER COOL Plus 6000 for Marine & Other Water Only Systems

- 23522127 One gallon jugs (6 per case)
- 23522128 5 gallon pail

POWER COOL Plus Marine (30/70)

- 23524677 5 gallon pail
- 23524676 55 gallon drums

POWER COOL 2000 Supplemental Coolant Additive

- 2000-16 23507858 Pint Bottle (12 per case)
- 2000-64 23507859 Half Gallons Jug (6 per case)
- 2000-05 23507860 5 Gallons Pail
- 2000-55 23507861 55 Gallons Drum



Productivity Solutions Group
Assembly Solutions
Business Development Center

IR. INGERSOLL-RAND.

Attachment	7
Page	1
Reference	



Ingersoll-Rand Company.
1467 Route 31 South
PO Box 970
Annandale, NJ 08801
USA
908-238-7000 Phone
908-238-7051 Fax

October 30 2002

Ingersoll-Rand Sensor, Tensor and Expert Hand Wrenches

This notice is to inform you that after December 31 2002 we cannot accept orders for Expert wrenches.

The original SPS Sensor and Tensor wrenches were last produced in 1996. The Control and Display boards are no longer available and many parts are obsolete. We can no longer repair these wrenches if replacement of these boards is required and can offer re-calibration and battery changes only. In cases where wrenches are returned for repair, the customer will be notified that the wrench is non-repairable.

The Expert wrench must also be discontinued as we have exhausted the supply of Display boards. These boards are no longer available in economic quantities. We have about 40 boards in the new version Expert 40 (planned replacement for the Tensor wrench). This product will now not be launched.

We will continue to support the Expert product line for as long as possible but eventually there will be no Display boards available.

We intend to replace the Expert with a new wrench based on the ETW product. This will carry many of the features available in the Expert at a reduced list price.

This will be available early 2003.

THE ASTM SEQUENCE IIIF SURVEILLANCE PANEL

SCOPE & OBJECTIVES

Attachment	8
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SCOPE

The Sequence IIIF Surveillance Panel is responsible for the surveillance and continual improvement of the Sequence IIIF test documented in ASTM Standard DNNNN-XX as update by the Information Letter System. Data on test precision and laboratory versus field correlation will be solicited and evaluated at least every six (6) months. The Surveillance Panel is to provide continual improvement of rating techniques, test operation, test monitoring and test validation through communication with the Test Sponsor, ASTM Test Monitoring Center, Operations and Hardware Subpanel, the Central Parts Distributor, ASTM B0.01 Passenger Car Engine Oil Classification Panel, ASTM Light Duty Rating Task Force, ASTM Committee B0.01, CMA Monitoring Agency and CRC Motor Rating Methods Group. Actions to improve the process will be recommended when appropriate based on input to the Surveillance Panel from one or more of the previously stated groups. Develop updated test procedures when necessary and review the correlation with previous test procedures. This process will provide the best possible Sequence III Type Test Procedure for evaluating automotive lubricant performance with respect to the lubricant's ability to prevent oil thickening, varnish formation, oil consumption and engine wear.

OBJECTIVES

- | | <u>TARGET DATE</u> |
|--|-----------------------------------|
| 1. Identify a 15W-40 HDD, CH-4 oil for the IIIF reference system | On hold - send letter |
| 2. Assembly Manual Revision System | November 2002 |
| 3. Control System Clarification | June 2002 3 |
| 4. Resolution of the unexplained, random wear in the IIIF Test Method | November 2002 |
| 5. Revise the IIIF Test Method for elevation to ASTM Standard | December 2002 'MAR 2003' |
| 6. Develop the IIIG test for inclusion in the ILSAC GF-4 Specification | January 2003 |
| 7. Introduction of the GF-3 Category Reference Oil | November 2002 MAY 2003 |
| 8. CRC/ASTM Rating Workshops | May 2003 |
| 9. MRV/CCS - establish limit to start tests | May 2003 |

William M. Nahumck, Chairman
Sequence IIIF Surveillance Panel

Updated November 21, 2002
San Antonio, Texas

Overview of Camshaft Phosphate Development & Quality Definition

November 21, 2002
San Antonio, Texas

IIIIG Development Group

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Reference	

Overview

- This presentation provides the background on the incorporation of phosphate coating of camshafts in the IIG test, and the quality changes made to the process since January 2002.

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Page	2
Reference	

Objectives

- Develop a test that generates controlled linear wear without initial scuffing. (i.e. single or multiple initial lobe failures.)
- Develop test components around materials and processes that can be defined and are quantifiable and repeatable.

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Reference	

Solution to Wear Problem

- Testing performed in early 2002, using phosphate coated (MK) camshafts, eliminated initial scuffing.

Attachment	9
Page	4
Reference	

IIIG Development Group Tour

- In July, the IIIG Development Group toured OHT vendors of camshafts and lifters.
- During the visit to the camshaft vendor, the group questioned the visual appearance of completed IIIG camshafts. These camshafts were rejected by OHT and the vendor initiated an investigation to identify the cause.

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Reference	

Investigation Results

- The vendor determined that the condition observed by the IIG group was “blush rust” caused by low phosphate tank temperature resulting in insufficient phosphate coating.
- Tank temperature was corrected and a large batch of “NF190°F” camshafts were processed, distributed and tested.

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Reference	

NF190 Camshafts

- Test results from NF190°F camshafts generated results ~ 50 microns above MK160°F camshafts. Wear discrimination remained intact.
- Based on these test results and a GM specification for phosphate (coating weight & grain formation), GM deemed the NF190°F camshafts unsuitable for testing.
- OHT recalled NF190°F material and pursued process changes that meet GM specification (NF200°F Camshafts).

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Reference	

Camshaft Component Sources

<u>Test Type</u>	<u>Castings</u>	<u>Grind</u>	<u>Phosphate</u>
III E	CWC	EPC	N/A
III F	CWC	EPC	N/A
III G / MK160	CWC	EPC	EPC
III G / NF190	CWC	EPC	EPC
III G / NF200	CWC	EPC	Outside Vendor of EPC

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Reference	

Summary

- The IIG wear test requires phosphate coated camshafts to eliminate scuffing and generate test results that correctly quantify an oils high temperature wear performance.
- NF200°F process variables are defined, controllable and meet our quality definition.

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Reference	

IIIG DATA

433-1 Results

Cam	ACLW	PVIS	WPD	APV
MK	35.9	228.4	2.76	8.52
MK	62	149.6	2.37	7.19
NF	37.7	191	2.94	8.46
NF	98.9	TVTM	3.13	8.51

538 Results

Cam	ACLW	PVIS	WPD	APV
MK	14.2	117.3	3.7	8.93
MK	12.8	117.5	3.5	9.16
NF	16.8	118.9	3.3	9.04
NF	17.9	91.6	2.9	8.73
NF	Running			
NF	Running			

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Reference	

IIIG CCS & MRV DRAFT REVISION

13.6.1 For non reference oils run a Cold-Cranking Simulator (CCS) test (Test Method D5293) on the end-of-test (100 hour) drain at the temperature specified for the test oils given viscosity grade in Table 1 of SAE J300 Revised DEC1999. If a passing result is not obtained, run a second CCS test at one grade higher (indicated by a five degree increase in temperature). Report CCS results, both at original grade and one higher, if required, on Form 6, Used Oil Analysis Results, in the standardized report form set (See A6).

13.6.2 Run the Mini Rotary Viscometer test (Test Method D4684), MRV-TP1, at the recommended temperature, based on the passing used oil CCS result, using the table shown in SAE J300, Rev. DEC1999A. Report the end-of-test Mini Rotary Viscometer test results as MRV Temperature in °C as follows. If a Yield Stress is obtained at the designated temperature, report the Yield Stress in Pa and note the Apparent Viscosity as not measured (NM). If a Yield Stress is not obtained at the designated temperature, report the Yield Stress as not measured (NM) and record the Apparent Viscosity in cP. Report the results on Form 6, Used Oil Analysis Results, in the standardized report form set (See A6).

13.6.3 If the % Viscosity Increase for the kinematic viscosity at EOT is higher than [specified IIIG pass limit], the CCS and MRV tests are not required. If CCS is more than one viscosity grade change from original grade no MRV required. A notation is required in the Other Comments & Outliers section of Form 13 (See A6) indicating that the CCS and MRV were not run and enter not measured (NM) in the standardized report form set (See A6).

Request data dictionary changes.

Oil Filter Revision- The IIIG oil filter has been changed from the AC brand to a WIX #51040.

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Reference	

ADDENDUM K1

DRAFT

TEMPLATE CHECKLIST

Purpose

The Checklist for Comparing Tests to the Template is used to assess progress in new engine test development against the Code Acceptance Criteria and Action Plans. The checklist is updated periodically during the course of test development and is provided to, and discussed with, the appropriate ASTM test development task force.

The rating scale for comparing test development to the Template is as follows:

A -- Completed

B -- In Progress

C -- Planned

D -- No Action

A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

Test Name Sequence IIIG Assessment Date 11/5/2002

**American Chemistry Council Code of Practice
Appendix K - Template for Acceptance of New Tests
Checklist for Comparing Tests to the Template**

A. Precision, Discrimination and Parameter Independence

A.1 Precision $E_p = d_p / S_{pp}$, $E_p \geq 1.0$ for all pass/fail parameters
 d_p = Smallest difference of practical importance
 S_{pp} = Pooled standard deviation at target level of performance

Parameter	d_p	S_{pp}	E_p	$\geq 1.0?$
Viscosity Increase (%)				
WPD				
APV				
ACLW				
OC				
MRV				

Comments:

Oil Consumption and CCS will be included in the MAD Survey.

A.2 Discrimination

For each test parameter in A.1, at least one of the oils used in proof-of-concept testing, matrix testing, or calibration testing must be statistically significantly different from at least one of the remaining oils. This difference must be in the correct direction, i.e., a poor oil should not test out as significantly better than a good oil. Significant difference may be declared with a p-value of 10% or less. Multiple comparison techniques (Tukey, Scheffe, Bonferroni, etc.) for the least-square means of the oils are preferred comparison techniques and should be stated in the analysis. Note that these least-squares means are not necessarily proposed LTMS targets.

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action
 A letter followed by an asterisk (*) indicates this item will be carried over from the IIF.

Parameter: Viscosity Increase

			p-value for t-test of equal means (Tukey)		
Oil	Least-Square Mean	95% Confidence Interval for Mean	Vs 1	Vs 2	vs 3

Parameter: APV

			p-value for t-test of equal means (Tukey)		
Oil	Least-Square Mean	95% Confidence Interval for Mean	Vs 1	Vs 2	vs 3

Parameter: WPD

			p-value for t-test of equal means (Tukey)		
Oil	Least-Square Mean	95% Confidence Interval for Mean	Vs 1	Vs 2	vs 3

Parameter: ACLW

			p-value for t-test of equal means (Tukey)		
Oil	Least-Square Mean	95% Confidence Interval for Mean	Vs 1	Vs 2	vs 3

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

Parameter: OC

Oil	Least-Square Mean	95% Confidence Interval for Mean	p-value for t-test of equal means (Tukey)		
			Vs 1	Vs 2	vs 3

Comments: *These tables will be completed upon analysis of matrix data and selection of reference oils. MRV and CCS will most likely be added.*

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action
 A letter followed by an asterisk (*) indicates this item will be carried over from the IIF.

A.3. Parameter Independence

Each pass/fail parameter has a unique and significant purpose in terms of the engine oil performance standard. Parameter independence is concluded if a correlation coefficient is 0.85 or less.

Pearson Correlation Coefficients for IIIG LTMS Matrix					
	TVIS	LAW	WPD	APV	OC
1/SQRT(Vis Inc): TVIS					
LN(ACLW): LAW					
Weighted Piston Deposits: WPD					
Average Piston Varnish: APV					
Oil Consumption: OC					

Pearson Partial Correlation Coefficients for IIIG LTMS Matrix					
	TVIS	LAW	WPD	APV	OC
1/SQRT(Vis Inc): TVIS					
LN(ACLW): LAW					
Weighted Piston Deposits: WPD					
Average Piston Varnish: APV					
Oil Consumption: OC					

Comments: *These tables are carry-overs from the IIIF. Transformation will be evaluated upon analysis of the data. MRV and CCS will most likely be added.*

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

Attachment	11
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Reference	

B. Severity and Precision Control Charting

Requirements

B.1 Is an LTMS for reference oil tests in place which is consistent with CMA Code Appendix A? B*

B.2 Are appropriate data transforms applied to test results? C

Comments: Transformations will be determined upon data analysis.

C. Interpretation of Multiple Tests

Requirements

C.1 Is a suitable system in place to handle repeat tests on a candidate oil?
Type: MTAC A*

C.2 Has a method for the determination and handling of outlier results been defined? A*

Comments:

D. Action Plan

D.1 Reference Oils

Do the majority of reference oils represent current technology? C

Are the majority of reference oils of passing or borderline pass/fail performance? C

Recommended Approaches

D.1.1 Is reference oil supply and distribution handled through an independent organization? A*

D.1.2 Is a quality control plan defined and in place? A*

D.1.3 Is a turnover plan defined/in place to ensure uninterrupted supply of reference oil and an orderly transition to reblends? A*

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action
A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

D.1.4 Is a process for introducing replacement reference oils defined and in place? A*

D.1.5 Are oils blended in a homogeneous quantity to last 5 years? C

Comments: A GF-4 Reference Oil will be needed.

D.2 Test Parts

Are all critical parts identified? A*

Is a system defined/in place to maintain uniform hardware? A*

Is there a system for engineering support and test parts supply? A*

Recommended Approaches

D.2.1 Are critical parts distributed through a Central Parts Distributor (CPD)? A*

D.2.2 Are critical parts serialized, and their use documented in test report? A*

D.2.3 Are all parts used on a first in/first out basis? A*

D.2.4 Are all rejected critical parts accounted for and returned to the CPD? A*

D.2.5 Does the CPD make status reports to the test surveillance body at least semi-annually? A*

D.2.6 Is there a QC and turnover plan in place for critical test parts, including identification and measurement of key part attributes, a system for parts quality accountability, a turnover plan in place for simultaneous industry-wide use of new parts or supply sources? A*

D.2.7 Is the CPD active in industry surveillance panel/group, and in industry sponsored test matrices? A*

Comments: According to the test sponsor, the new phosphated CAMS will be serialized. All other parts are carried over from the IIIF.

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

D.3 Test Fuel

Recommended Approaches

D.3.1 Is the fuel specified and the supplier(s) identified? A*

Specified Fuels, Haltermann.

Is a process in place to monitor fuel stability over time? A*
Specified Fuels sampling.

Are approval guidelines in place for fuel certification? A*

FTP Certification process

D.3.2 If the test fuel is treated as a critical part of the test procedure:
 Is an approval plan and severity monitoring plan for each fuel batch in place? A*

FTP Certification process

Is a quality control plan defined and in place to assure long term quality of the fuel? A*

FTP Certification process

Is a turnover plan defined, in place and demonstrated to ensure uninterrupted supply of fuel? A*

FTP Certification process turnover plan

Comments: *The impact of fuel batch changes has been assumed to be non-critical.*

D.4 Test Procedure

Recommended Approaches

D.4.1 Is a technical report published documenting, per ASTM FlowPlan:

Test precision for reference oils? C

Field correlation? D

Test development history? C

D.4.2 Are test preparation and operation clearly documented in a standard format, e.g., ASTM, CEC B

D.4.3 Are test stand configuration requirements documented and Standardized? A*

D.4.4 Are milestones for precision improvements established D

D.4.5 Are routine engine builder workshops planned/conducted? C

Comments:

D.5 Rating and Reporting of Results

Recommended Approaches

D.5.1 Are the reported ratings from single raters (i.e. not averages from various raters)? A*

D.5.2 Is a suitable severity adjustment system in place? B*

D.5.3 Is each pass/fail parameter unique and have a significant purpose for judging engine oil performance? C

An analysis must be performed on the new data.

D.5.4 Do all rate and report parameters judge operational validity, help in test interpretation or judge engine oil performance? C

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action

A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

D.5.5 Are routine rater workshops conducted/planned? B*

Comments:

D.6 Calibration, Monitoring and Surveillance

Recommended Approaches

D.6.1 Is a process in place for independent monitoring of severity and precision with an action plan for maintaining calibration of all laboratories? A*

D.6.2 Are stand, lab, and industry reference oil control charts of all pass/fail criteria parameters used to judge calibration status? A*

D.6.3 Does the specified calibration test interval allow no more than 15 non-reference oil test between successful calibration tests? C

D.6.4 Is an industry surveillance panel in place? A*

Comments:

D.7 Guidelines for Read Across

Recommended Approaches

D.7.1 Is a plan defined to establish data for development of BOI and VGRA? B

Comment: *VGRA guidelines from IIIF will be carried over to the IIIG. Use of the Single Technology Matrix is planned for BOI.*

D.7.2 Has VGRA and BOI data been summarized and included in the technical report in D.4.1? C

Comments:

RATING SCALE: A - Completed; B - In Progress; C - Planned; D - No Action
 A letter followed by an asterisk (*) indicates this item will be carried over from the IIIF.

Attachment 12

Motions & Action Items

Sequence IIIF Surveillance Panel

November 21, 2002

As Recorded at the Meeting by Ben Weber

1. Previous meeting minutes accepted in "good faith".
2. CRC rating functions are not clear at this point and into the future. A Task Force lead by Scott Parke of TMC with members of the SP chairs will be formed to look into coordinating the CRC and ASTM functions. In the meantime, ASTM/TMC will proceed with scheduling a February 2003 light-duty rating workshop.
3. It was suggested that a time limit be placed on when MRV and CCS samples need to be initiated. 72 hrs is suggested. Labs are encouraged to consult with their chemical analysis experts to see if that is acceptable.
4. See the meeting minutes from this meeting for the previous action items that are still open.
5. The TMC report was accepted as presented.
6. TMC was asked to investigate if there was any hardware issues that might explain the shift in WPD and APV severity that occurred during this reporting period.
7. Phil S and TMC will look into if the IIIF HD viscosity increase stats were incorrectly set given the huge cusumm severity shift in the severe direction. Or, are the severity adjustments taking care of the situation? Phil S found his earlier analysis of the targets, and after review of this data it was determined that there was no need to go back and review the initial targets. There was plenty of data that was used in generating these targets. Bill N will notify Jim McGeehan of this issue.
8. [Charlie L & Pat L] Motion to table the introduction of 1009 until the next Sequence III SP meeting. Passed unanimously.
9. The RSI report was accepted as presented.
10. Haltermann notified the SP that they have been periodically adding light ends to the EEE fuel. Haltermann will go back and let the SP know how many times with dates they have added light ends to the fuel, what percentage and what the material was (same request as in the VG SP meeting). It was decided that Haltermann should go back 3 years for this analysis.
11. [Bill N & Pat L] Motion was made to add a sulfur specification of 5 – 15 to the EEE test fuel. Passed unanimously.
12. The CPD report was accepted as presented. OHT did mention that they have recently changed vendors to try and improve the plating oxidation that sometimes occurs when the oil coolers set without use for a long period of time.
13. GM gave a short verbal report that was accepted as presented. Inventory levels are high at GM Motorsports. The front cover recently experienced a casting change that resulted in a rougher surface finish in some spots than in the past. GM will investigate this change further. There was not a new part number to distinguish this change.
14. In 60 days, Power Cool is no longer allowed unless the lab bought it before today or the supplier can prove that it is chemically identical to what is listed in the test method.
15. [Dwight B & Gordon F] Motion to accept part number 12568877 for the mass airflow sensor as equivalent to the current part number 24508238 pending Sid C's review. Passed unanimously.
16. [Dwight B & Charlie L] Motion was made to accept the Ingersall-Rand EVS125-10E as an equivalent alternative torque wrench. Passed unanimously.
17. Future action items for the O&H include:
 - Change to the flush cart to help prevent the re-circulation of casting sand during the flush
 - Standardization of the flush solvent
 - Batch concept/hardware control task force to generate Information Letter 60 type document
18. Sid C and Pat L will work to change the table on Form 5 entitled Oil Consumption Data to list the calculated oil consumption. The oil level and consumption worksheet will also be modified appropriately.
19. Sid C will continue to pursue the assembly manual revision system. It was suggested that this update take place quarter via electronic distribution through TMC similar to the Information Letter system.

Attachment 12 (continued)

20. Sid C and TMC will work on an upcoming motion and information letter regarding the control system clarification. This can be completed via e-mail ballot.
21. Bill N will notify the HD class panel chair that the IIIF HD reference oil will not happen at this time.
22. It was suggested that within the next couple of weeks, GM publish a test plan for future IIIG development work.
23. GM clarified the CCS and MRV test procedures. See the meeting minutes for the long details. This will require changes to the data dictionary.
24. The IIIG oil filter has been changed from an AC brand to a WIX #51040. We won't be running these WIX filters in IIIF testing for at least another six months.
25. Bill N will check with Chris May to see if the changes proposed today concerning the MRV and CCS procedures will take care of Chris' concerns.
26. GM will consider the continuation and use of photographs. GM stated that they will want to see photographs on every factor fill approval granted by GM. There were also concerns regarding LRI needs.
27. Monica B questioned the 365kPa specification for fuel rail pressure. Is this a specification to run tests against? She noted that several labs run at a different specification. GM stated that the specification might be increased, but they will review this with their design people and get back to the group.